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# FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT

(\$) ~~710~~ 750

## Complete if Known

Application Number

Filing Date

First Named Inventor

Malpass

Examiner Name

Group Art Unit

Attorney Docket No.

0315

## METHOD OF PAYMENT

1. ☐ The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

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☐ Applicant claims small entity status  
See 37 CFR 1.27

2. ☒ Payment Enclosed:

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## FEE CALCULATION

## 1. BASIC FILING FEE

Large Entity Small Entity

 Fee Fee Fee Fee  
Code (\$) Code (\$)

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
101	710	201	355	Utility filing fee	710
106	320	206	160	Design filing fee	
107	490	207	245	Plant filing fee	
108	710	208	355	Reissue filing fee	
114	150	214	75	Provisional filing fee	

SUBTOTAL (1) (\$) 710

## 2. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid
16	-20** = 0	X	
3	-3** = 0	X	
Multiple Dependent			

Large Entity Small Entity

 Fee Fee Fee Fee  
Code (\$) Code (\$)

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description
103	18	203	9	Claims in excess of 20
102	80	202	40	Independent claims in excess of 3
104	270	204	135	Multiple dependent claim, if not paid
109	80	209	40	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$) 0

\*\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

## 3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for <i>ex parte</i> reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	390	216	195	Extension for reply within second month	
117	890	217	445	Extension for reply within third month	
118	1,390	218	695	Extension for reply within fourth month	
128	1,890	228	945	Extension for reply within fifth month	
119	310	219	155	Notice of Appeal	
120	310	220	155	Filing a brief in support of an appeal	
121	270	221	135	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,240	241	620	Petition to revive - unintentional	
142	1,240	242	620	Utility issue fee (or reissue)	
143	440	243	220	Design issue fee	
144	600	244	300	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Processing fee under 37 CFR 1.17(q)	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	40
146	710	246	355	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	710	249	355	For each additional invention to be examined (37 CFR § 1.129(b))	
179	710	279	355	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

Other fee (specify)

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$)

40

## SUBMITTED BY

Name (Print/Type)

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Registration No.  
(Attorney/Agent)

44,311

## Complete (if applicable)

Telephone

513-579-6479

Signature

[Signature]

Date

11-21-00

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November 21, 2000

**Via U.S. Express Mail**

Assistant Commissioner for Patents  
Box Patent Application  
Washington, D.C. 20231

RE: Patent Application for "Slip Resistant Mat and Process of Manufacture of Same"

Dear Sir or Madam:

Enclosed please find:

1. Utility Patent Application Transmittal;
2. Fee Transmittal Form;
3. Specification and Abstract (8 pages);
4. Drawings (6 sheets);
5. Declaration for Utility Patent Application;
6. Assignment of Invention and Recordation Form;
7. Power of Attorney;
8. Information Disclosure Statement;
9. Return Postcard;
10. Certificate of Express Mailing; and
11. Check for \$750 for \$710 filing fee and \$40 assignment fee.

Please file this application and if you have any questions do not hesitate to contact me (513-579-6479). Thank you for your assistance with this matter.

Very truly yours,

KEATING, MUETHING & KLEKAMP, P.L.L.

BY: 

Daniel B. Runk

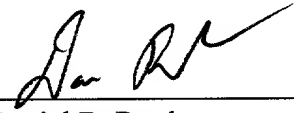
Enclosures

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"Express Mail" mailing label number: EL 749/36 590 vs Date of Deposit: November 21, 2006



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Daniel B. Runk

EL 749/36 590 vs

# UNITED STATES PATENT APPLICATION SPECIFICATION

## SLIP RESISTANT MAT AND PROCESS OF MANUFACTURE OF SAME

### FIELD OF INVENTION

This invention relates generally to slip resistant, anti-skid or anti-creep mats.

### BACKGROUND OF THE INVENTION

In the past, dust floor mats, consisting of rubber backed carpet tuft, were made with either a smooth back, primarily for solid or non carpeted floors, or with a variety of "grippers" or "cleats" arranged to reduce the movement on carpeted floors. However, both of these approaches resulted in floor mats that were not skid resistant on smooth floors, especially those floors with high traffic areas or loads being moved over them. The movement of in the gripper/cleat mat design results from the force of foot and vehicle traffic on the mat which causes deformation around the compressed area and upon removal of such force the mat returns to a different position. For the smooth back mats, movement of the mat results from similar forces and the lack of any device intended to secure the mat in place.

A number of approaches have been taken to attempt to reduce the movement of mats. One known approach to the problem is to fasten the mat to the intended surface by various devices, such as that suggested by Kessler in U.S. Patent No. 6,068,908 which utilizes a system by which a mat is fastened to the surface using a clip system. While this approach is well-developed, it results in floor mats that are difficult or impossible to move from place to place and the structures required to attach the mat add a measure of expense to the mat and difficulty to the installation. Also, attached mats are more rigid.

Another approach involves the use of a frame into which the mat is placed, such as the frames used by Moffitt, Jr. in U.S. Patent No. 4,361,614 and Kessler in U.S. Patent No. 6,042,915. The frame can be located flush with or upon the surface. In either circumstance,

unless the frame is fastened as mentioned above or embedded in the surface, the frame still has a tendency to shift on the surface. If the frame is fastened or embedded, then the problems mentioned above remain.

Another approach involves the use of suction cups, such as those commonly found on shower and bath mats, examples of which can be found by Lindholm in U.S. Patent No. 6,014,779 in which the corners of a rectangular mat are held by four suction cups and by Gavlak in U.S. Patent No. 2,081,992 in which a plurality of suction cups hold the bathtub mat to the surface. While this invention provides acceptable slip-resistance for light shower and bath mat applications, traditional suction cups are not sufficient to prevent slipping in high traffic areas and also result in waves forming within mats, which results in movement of the mats and a less stable and flat top surface for the mats.

As mentioned, existing approaches to reducing movement of mats include significant limitations. Further, the known approaches require additional space, components, installation effort and expense. As a result, significant improvement can still be made relative to reducing the movement of floor mats.

## SUMMARY OF THE INVENTION

The object of the present invention is to utilize recessions formed on the underside of the mat to reduce movement of the mat on the intended surface, typically floors. The present invention utilizes a plurality of recessions to reduce the movement of the mat. The recessions receive a compression force upon having foot or vehicular traffic impact the mat and such compression force creates a small low pressure area or near vacuum inside the recessions being impacted against the floor. As a result, the vacuum then creates a force that acts to oppose the lateral motion of the mat that would otherwise result from the traffic.

The size and shape specifications of the recessions can be varied and they can be positioned in a variety of arrangements. The recessions can be any shape that is formed on the

underside of the mat, does not extend through the top of the mat (i.e., is contained within the mat), and adjoins the floor in a continuous manner to permit the formation of a low pressure area or near vacuum. In one embodiment, the recessions are two sizes of cylinders or recessed circles, one with a width of 0.75" and a depth of .040" and the other with a width of 1" and a depth of .063". Also, in one embodiment, the recessions are positioned in straight rows along one axis with the recessions in each adjacent row along such axis offset along the perpendicular axis such that every row is identical along the parallel axes but shifted along the perpendicular axis. In one embodiment the pattern does not extend to the edge of the mat in order to prevent tearing and permit the edge of the mat to be uniformly thick. The existence of multiple sizes of recessions permits improved performance on a variety of floor surfaces since larger recessions perform better on some surfaces and smaller recessions perform better on others.

In one embodiment, the recessions are formed on a base layer of material and then the base layer of material is laminated to one or more other top layers of material. While the layers can be made from different materials, in one embodiment the base layer and any intermediate layers are sheets of rubber and the uppermost of the top layers is a union of a rubber sheet with carpet, yarn or other fabric on top. In one embodiment, a soft, low durometer rubber compound, such as LD-35, is plied to a T6 aluminum mold to form the recessions and then this base layer is laminated with one or more upper layers formed from Millennium Mat MM-170 rubber compound with the uppermost layer bonded with a yarn/carpet material. In this embodiment, after lamination of the layers, the laminated sheet is pricked to avoid the accretion of gases during the curing process. Additionally, in another embodiment, additives can be introduced to the mat to make it anti-bacterial.

One advantage of the present invention is that the mat resists slipping to a much greater extent than existing mat designs. Another advantage of the invention is that the edges of the mat are more stable and therefore it is less of a tripping hazard or obstacle than traditional mats in which the edge easily rolls up onto the mat. Another advantage is that it provides the slip-resistance features without adding any weight or installation complexity to existing mat designs.

Another advantage is that the invention does not require any permanent fastening means and is therefore easy to move to different locations. Another advantage is that the recessions provide some additional cushioning effect for pedestrian and vehicular traffic. Another advantage is that the recessions' cushioning effect has an anti-fatigue effect, thereby resulting in reduced wear and tear and routine maintenance. Another advantage of the invention is that the slip-resistance is effective on a wide variety of surfaces because of the variable sized and spaced recessions.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a bottom fragmentary view of one embodiment of the present invention.

FIG. 2 is a fragmentary side elevational view of one embodiment of the present invention taken across Line A—A.

FIG. 3 is a fragmentary side elevational view of another embodiment of the present invention taken across Line A—A.

FIG. 4 is a fragmentary side elevational view of another embodiment of the present invention taken across Line A—A.

FIG. 5 is a cut-away elevational view of a single recession in one embodiment.

FIG. 6 is a fragmentary side elevational view of a single recession in one embodiment and the forces impacting such recession.

#### DETAILED DESCRIPTION

FIG 1 illustrates a portion of a mat (20) with a plurality of small recessions (25) and large recessions (30) that extend nearly to the edge of the mat (15).

FIG 2 illustrates a view of a cross-section of a single layer mat (20). The mat (20) has a single layer (40) which contains recessions (30) in the underside (61) of the bottom layer (40).

FIG 3 illustrates a view of a cross-section of another single layer mat (20). The mat (20) has a single bottom layer (40) which contains recessions (30) in the underside (61) of the bottom layer (40). The bottom layer has a yarn, carpet or other fabric layer (52) laminated or otherwise

bonded to the upper surface (60) of the bottom layer (40).

FIG 4 illustrates a view of a cross-section of a multi-layer laminated mat (20) comprised of a bottom layer (40) and an upper layer (50). The upper surface (60) of the bottom layer (40) is laminated to or otherwise bonded with the lower surface (70) of the support layer (51) of the upper layer (50). The upper layer (50) has a yarn, carpet or other fabric layer (52) laminated or otherwise bonded on the upper surface (71) of the support layer (51). The bottom layer (40) contains recessions (30) in the underside (61) of the bottom layer (40).

FIG 5 illustrates a conceptual drawing of a single recession (30) depicted in FIGS. 1, 2, 3 and 4. The recession (30) has a width (w) running from the left edge (31) to the right edge (32), a height (h) running from the top edge (35) to the bottom edge (36), and a depth (d) running from the bottom opening (38) that would be flat against the floor to the top surface (39).

FIG. 6 depicts a single recession (30) in a mat (20). As foot or vehicle traffic impacts the mat (20), a force (f) is applied to the mat (20). In the vast majority of circumstances the force (f) does not impact the mat (20) in a completely vertical or horizontal manner; hence the force (f) consists of both horizontal force components ( $f(x)$  and  $f(y)$ ) and a vertical force component  $f(z)$ . The vertical force component  $f(z)$  acts to press the mat down against the surface (10) and holds the mat (20) against the surface (10). Additionally, the vertical force component  $f(z)$  also compresses the recession (30) thereby creating a low pressure area or near vacuum in the recession (30) between the mat (20) and the surface (10) which results in an effective resistant downward force (s) which acts in combination with the vertical force component ( $f_y$ ) to oppose the horizontal force components  $f(x)$  and  $f(y)$  thereby resisting lateral movement of the mat (20).

The preceding description of the invention has shown and described certain embodiments thereof; however, it is intended by way of illustration and example only and not by way of limitation. Those skilled in the art should understand that various changes, omissions and additions may be made to the invention without departing from the spirit and scope of the invention.

## CLAIMS

We claim:

1. A mat comprising:  
at least one layer of material having a generally flat top surface and a generally flat bottom surface;  
the bottom layer of said mat having a plurality of recessions on said bottom surface of said bottom layer.
2. That mat as described in claim 1 wherein said material is rubber or plastic.
3. The mat as described in claim 1 wherein said recessions are cylindrical in shape.
4. The mat as described in claim 1 wherein said recessions are formed in a plurality of straight rows on said bottom surface of said bottom layer and said plurality of straight rows are parallel to each other.
5. The mat as described in claim 1 wherein the upper surface of the top layer of said mat comprises a bond of said top layer with another layer consisting of the group of yarn, carpet or fabric.
6. The mat as described in claim 1 wherein said mat comprises two layers of materials having top and bottom surfaces the top surface of the bottom layer being bonded to the bottom surface of the top layer.
7. The mat as described in claim 5 wherein said mat comprises two layers of materials having top and bottom surfaces the top surface of the bottom layer being bonded to the bottom surface of the top layer.
8. The mat as described in claim 1 wherein said mat comprises two or more layers of material each of said layers consisting of a different material.
9. The mat as described in claim 8 wherein said layers consist of varieties of rubber having varying flexibilities.
10. The mat as described in claim 7 wherein said bottom layer consists of a rubber

compound having a lower durometer reading than said top layer.

11. The mat as described in claim 10 wherein said bottom layer has a durometer reading of less than 45 units and said top layer has a durometer reading of more than 75 units.

12. The mat as described in claim 10 wherein the durometer reading of said bottom layer is at least 25 durometer units less than said top layer.

13. The mat as described in claim 1 wherein said material of at least one layer of said mat is impregnated with anti-bacterial materials.

14. A process for producing a mat according to claim 1, comprising the steps of:  
supplying a sheet of material to a mold for a press molding of said mat; and  
carrying out a press molding.

15. A process as described in claim 14 also comprising the step of cutting a molded sheet to the desired size to obtain a floor mat.

16. A process for producing a mat according to claim 6 or 7, comprising the steps of:  
producing a bottom layer of material according to claim 14 or 15;  
supplying a top layer of material; and  
laminating said bottom layer and said top layer of material; and  
curing said mat.

17. The process for producing a mat according to claim 6 or 7, comprising the steps of:  
producing a bottom layer of material according to claim 14 or 15;  
supplying a top layer of material;  
laminating said bottom layer and said top layer of material;  
pricking said mat; and  
curing said mat.

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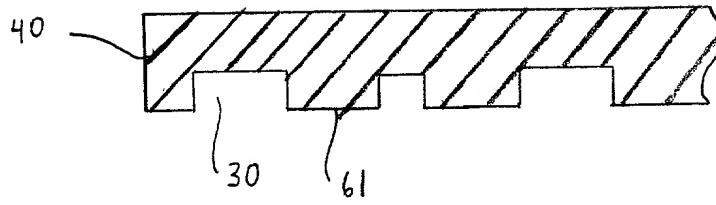


FIG. 2

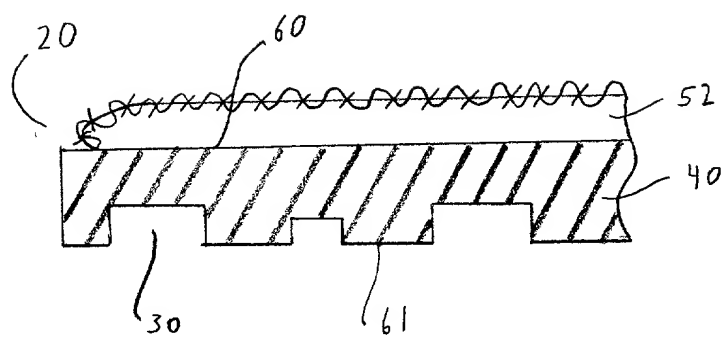


FIG. 3

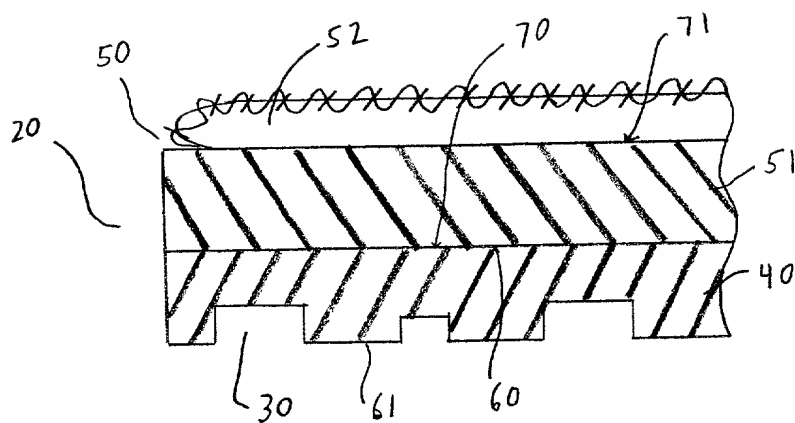


FIG. 4

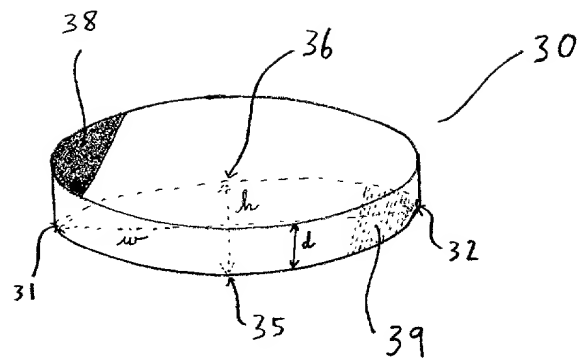


FIG. 5

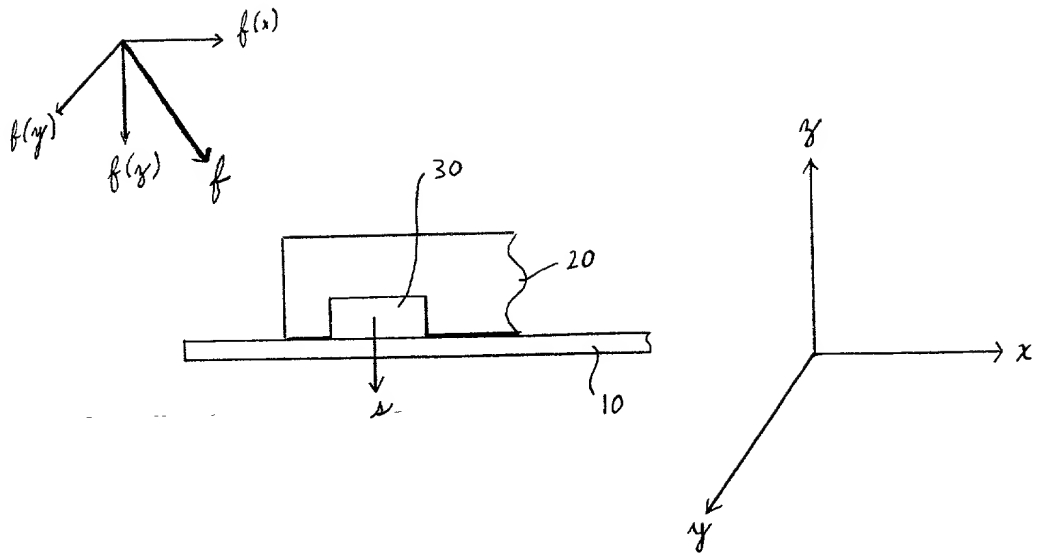


FIG. 6

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<b>DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)</b>  <input checked="" type="checkbox"/> Declaration Submitted with Initial Filing      OR <input type="checkbox"/> Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)	<b>Attorney Docket Number</b>	0315
	<b>First Named Inventor</b>	Malpass
	<b>COMPLETE IF KNOWN</b>	
	<b>Application Number</b>	/
	<b>Filing Date</b>	
	<b>Group Art Unit</b>	
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As a below named inventor, I hereby declare that:

My residence, mailing address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Slip Resistant Mat and Process of Manufacture of Same

*(Title of the Invention)*

the specification of which

☒ is attached hereto

OR

☐ was filed on (MM/DD/YYYY)

as United States Application Number or PCT International

Application Number

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(if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

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I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
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			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	<input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

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NAME OF SOLE OR FIRST INVENTOR:				<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle if any)		Last S.		Family Name or Surname	
Inventor's Signature				Date	
Residence: City		State		Country	
Alpharetta		GA		USA	
Mailing Address		9030 Old Southwick Pass		Citizenship	
Mailing Address				U.K.	
City		State		ZIP	
Alpharetta		GA		30022	
Country		USA			
NAME OF SECOND INVENTOR:				<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle if any)		Jeffrey L.		Family Name or Surname	
Inventor's Signature				Date	
Residence: City		State		Country	
Conyers		GA		USA	
Mailing Address		3314 Sans Way		Citizenship	
Mailing Address				USA	
City		State		ZIP	
Conyers		GA		30013	
Country		USA			
<input type="checkbox"/> Additional inventors are being named on the _____ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto.					

(Page 2 of 2)

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